

Supporting Communication in an Integrated Patient Record System

Dario A. Giuse, Dr. Ing.
Informatics Center
Vanderbilt University Medical Center, Nashville, Tennessee

The typical Health Information Systems in use at large medical centers are composed of a variety of interfaced software systems, usually commercial HIS components. From the user's perspective, the interface is typically a workstation desktop with numerous icons, each corresponding to a different application. Performing routine clinical tasks generally involves switching among multiple icons, and using applications that do not exchange much information and thus may require multiple data entry.

Over the past two years, Vanderbilt University Medical Center (VUMC) has developed and implemented an integrated user interface front end that gives users a homogeneous view that supports directly the clinical workflow. This system, known as StarPanel, is a Web-based front end that integrates seamlessly all the functions needed for busy outpatient clinics. The key design concept is the ability to support communication as the fundamental activity of a health care team. With StarPanel, clinical users can communicate with other team members via secure electronic messaging that is closely integrated with the electronic patient chart. In response to a patient's call for a prescription refill, for instance, a secretary may initiate a new message, recording the request and capturing automatically all the relevant patient contact information. The message is then routed to an electronic "message basket" that is tied to a role rather than an individual, thus allowing automatic handling of cross-coverage, lunch breaks, vacation, or sickness situations. The request may travel back and forth among members of the team until a user (usually a provider) decides the communication is concluded and seamlessly makes it part of the permanent patient chart.

To facilitate communication as the central paradigm, any action can typically be invoked from any display, as appropriate to the individual's workflow. For example, a physician may be in the middle of reviewing new results (lab tests, radiology reports, and any other document for all the patients in a particular set, or "panel", of patients). A new result, such as a positive culture, may necessitate a clinical action, such as notifying the patient that a return visit is needed. The display of the new result contains a link that allows the physician to initiate immediately

a new clinical communication by sending a message to a nurse's basket and including a pointer to the new result. The nurse, upon receiving the message, can then contact the patient, disclose the positive culture result, and initiate a new appointment. After the appointment is made, the nurse will send the message back to inform the physician, who in turn will save the entire communication to the permanent electronic record.

Access to all the institutional databases and work lists (such as outpatient and inpatient lists, past and future appointments, providers' scratch census, etc.) is integrated within the common front end. Any patient list – such as the outpatient visits for a clinic for today – can be used to review a patient's entire chart, generate new documentation (such as creating an electronic clinic note), or drive functions such as reviewing new results or generating instant "whiteboards" to indicate progress through a patient care episode.

Development of the StarPanel system began in June 2001, and implementation in the Adult Primary Care Clinic at VUMC began in October 2001. Following a rapid implementation schedule, the system has been implemented in all the VUMC outpatient clinics (which support more than 700,000 visits per year) in slightly under 12 months. As part of the process, the clinics have effectively become paperless. Electronic messaging and numerous electronic forms, in addition to the already existing electronic patient chart, allow the care team to capture electronically most of the data generated as part of the ambulatory process. Any document that is still left in paper form (such as outside medical records, or documents that are still hand-written) is captured via scanning and converted into electronic images. The StarPanel roll-out process has eliminated the "shadow charts" that used to be kept in each individual clinic and often contained information that was not to be found anywhere else. Thus, in addition to improving the efficiency of the outpatient health care process, the system is ensuring that all clinical data generated as part of outpatient visits anywhere at VUMC are now immediately available to any other provider with a need to access that patient's data.